

UNDER
THE RED CRESCENT:

BEING

*SURGICAL EXPERIENCES AND OBSERVATIONS AS
AN AMBULANCE SURGEON IN BULGARIA
DURING THE RUSSO-TURKISH
WAR OF 1877-78.*

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UNDER THE RED CRESCENT.

DURING the late Russo-Turkish war, I was sent out by Lord Blantyre, as a surgeon, to assist the Turkish wounded, and in that capacity acted both independently, and attached to Ottoman Red Crescent ambulances, and also, for a short time, took charge for Stafford House Society of their hospitals at Philippopolis.

In this work I travelled from Constantinople to within a few miles of Plevna, when I was stopped by the advance of the Russians.

I saw some of the active fighting on the Plevna road, and had considerable experience of the wounded from the fighting at Shipka, the hospitals at Philippopolis being the first place to which the Shipka wounded were removed, after treatment by the ambulances stationed there.

My time was so much broken up by being hurried about from place to place, and the amount of work, both surgical and medical, was so overpowering, not only from the large numbers of sick and wounded, but also from the very small number of medical men, together with most inadequate assistance for dressing the wounded, that any definite or detailed record of my work is rendered quite impossible. Yet I venture to hope, the simple statement of some of my experiences and observations may not be devoid of interest to members of this Society.

The first point I would call your attention to is the fact that only very few of the wounded, in modern wars, are wounded by cuts or stabs, so few, indeed, that to one who reads in newspaper accounts of battles, of desperate charges with the bayonet, of fearful hand to hand fights at the taking of redoubts, and so forth, where the imagination pictures the wounded from bayonet stabs at hundreds or more, the real number must appear absurdly, even incredibly, small.

In the late Russo-Turkish war, where I had the opportunity of seeing thousands of wounded men, I am sure I did not see more than half a dozen suffering from sword, or sabre, or lance, or bayonet wounds. And all the enquiries I could make did not enable me to come across any one whose experience differed much from my own. Why is this? I suppose it is due to the recent improvements in the firearms with which troops are armed, especially the introduction of breech loading, by which the rapidity of fire can be so very much increased. In consequence of the ease and rapidity with which a soldier can load and fire his rifle now-a-days, the firing of shot takes place even at close quarters. Even in a regular charge, I believe, it is in great measure only those who fall wounded who are bayoneted—the attacking party and the attacked both trusting more to a rapid fire of small arms than to the bayonet. In the case of an assault, for example, on an earthwork, the holders of the earthwork, if moderately cool and steady, pour in a close and murderous fire up to the very moment the enemy enter the defences, and although there then may be some little hand to hand fighting, it is comparatively trifling, as the defenders of the earthwork, if beaten, either retire precipitately, in which case they are fired upon, and only those who fall wounded are bayoneted by the pursuing enemy, or they retire slowly, showing a steady front and keeping up fire, so that the enemy prefer to answer them in like manner. There is another reason why we see so few wounded by either cuts or stabs, besides the fact that in recent wars cuts or stabs are comparatively rarely given or received. And that is, that I believe the great majority of cases of cuts or stabs prove fatal on the field, and are, therefore, to be numbered among the killed. If you think for a moment of the circumstances of a close hand to hand conflict with the bayonet, a scene where the wildest passion reigns, and a tiger-like ferocity seems to characterise the combatants, where an enemy is not only overthrown, but trampled upon, you will see the reasonableness of allowing that few of those wounded under such circumstances, and with such a weapon, survive the final thrust, and hardly one lives to be taken off the field. Then there is the fact that the bayonet is, after all, a clumsy and inefficient weapon for close quarters. In fact it not unfrequently acts as a sort of trap for its unfortunate employer. It may become fixed in an enemy's body beyond power of withdrawal, in time at least to be a defence; or it may be rendered useless by having a body hurled upon it, as was done with so much success by the Zulus at the recent battle of Isandula. Soldiers, at least Turkish ones, don't like

the bayonet as a weapon; they distrust it; and, as a rule, prefer firing their rifle to using the bayonet. A weapon such as the short heavy knife with which our Indian Gurko regiments are armed, or the regulation bowie knife of the Americans, is the deadliest instrument in hand to hand fighting.

In a cavalry charge, especially when the weapon of the attacking party is the lance, you can understand many a man laid low by a comparatively slight flesh wound. Indeed, more than one, of the half-dozen I saw wounded by cuts or stabs, were wounded by the lance of a Cossack.

The number of wounded in modern wars, from any other and from all other causes than gunshot, is so insignificant, and the injuries of war which the modern military surgeon has brought under his notice, and is called upon to treat are, therefore, so almost exclusively those resulting from gunshot, that practically the entire scope of modern military surgical teaching comes to be the proper treatment of gunshot injuries.

The nature of the ground over which fighting has taken place will modify the appearance of bullet wounds, as also it will affect the proportion of wounds to the different parts of the body. If, in inspecting wounded in an hospital in Philippopolis or Adrianople, you found a large number of them suffering from wounds of the upper part of the body, especially of the hands, face, and neck; if you found, moreover, that the wounds of entrance, in most of them, presented a peculiar appearance, being large in size and oblique in direction,—and, further, on looking more closely you found that this large size of these wounds of entrance was caused by a superficial furrow or planing off of the integuments leading up to the point where the bullet began to penetrate the deeper structures,—that, in fact, the wound was a combination of “a razing shot” and a penetrating shot, then you might be perfectly certain they were men who had been wounded in the fighting at Shipka. The wounded from Shipka were easily distinguishable by the nature and position of their wounds, which were nearly all in the upper parts of the body, and, in most of them, the bullet appeared to have struck the body in an oblique direction. This is, I think, satisfactorily accounted for by the nature of the ground over which the fighting took place. The ground was steep and rough, being the entrance of one of the Balkan passes; and, while climbing up the slopes, and over the rough and broken ground, the Turkish soldiers had often to do so on hands and knees, all the while exposed to the fire of the enemy above. Under such circumstances the upper parts of the soldier’s body were very much more liable to injury from the

bullets of the enemy, and especially was this the case with his hands and face. And this same formation of the ground readily accounts for the oblique direction with which many of the bullets would strike; and for the same bullet, especially in the neck, causing first of all a "razing wound," and then penetrating deeply. Generally speaking, you may expect to find in cases of bullet wounds, where the bullet has passed out that the wound of exit is larger, and with its edges more ragged and torn than the wound of entrance. Of course, besides this, in the wound of entrance the edges are inverted, while in the wound of exit they are everted. But in these Shipka wounds, the wound of entrance was much larger than the wound of exit, owing to the oblique direction in which the bullets must have struck. But this largeness of the wound of entrance, as Mr. Longmore remarks, "is only in seeming, and is owing to the projectile having struck the surface slantingly, so that parts of the skin and subcutaneous areolar tissues have been shaved away, as it were, before the projectile had passed inwards through the superficial fascia." "There is here," Mr. Longmore continues, "strictly speaking, a razing wound on one side of the true wound of entrance; for the true entrance wound is, of course, the commencement of the track of the projectile through the deeper structures."

A great deal of fighting in this war took place under cover of earthworks, and here the protection, afforded to the lower parts of the body by the earthwork, made it almost impossible for the men to be wounded in any other than the upper parts of the body, and also made it very difficult for them to be hit at all. For example, the farthest point I reached, before being met by the Russians, was a small village called Telis, about six miles from Plevna. Here a camp had been fixed by the Turks, and earthworks thrown up for the protection of the road into Plevna. On one of the attacks by the Russians on this earthwork, although they vastly outnumbered the Turks, they were driven off, leaving behind them on the field many hundreds of dead and wounded, while the Turkish loss only amounted to some 21 killed and about 50 wounded. Here the earthwork gave complete protection to all but the heads, shoulders, and upper part of the chests of the Turks, hence the remarkably small number of their men hit, and likewise the reason why nearly one-third of those hit were killed. Those killed were nearly all shot through the brain or chest, and died instantly. An enormous proportion of the bullets fired here by the Russians lodged in the soft breastwork of earth and did no damage. As an example of the same thing—viz., of the

effect which protection or cover to the men fighting has on the proportion of hits to shots fired, Mr. Longmore, in his recent work on *Gunshot Injuries*, mentions how, on one occasion, during the war in New Zealand, the Maories attacked a British force from cover of thick bush, and both killed and wounded some of our men, and yet it is not supposed that our men succeeded in killing or wounding one of the enemy, although they fired off more than 20,000 rounds of ball cartridge in the attempt.

I have got notes of only about 100 cases, and these are mostly cases from Shipka, or cases seen by me on the Plevna road.

I find that of these—

52 are wounds of the upper extremities,
26 of the head and neck,
13 of the lower extremities,
6 of the chest,
3 of the abdomen.

The very marked preponderance shown here of wounds of the upper parts of the body should certainly be attributed to the fact that they are mostly cases from Shipka and Telis, where the circumstances, as noted by me above, under which the men fought, modified the regional distribution of the wounds. Still, the fact remains, that the general impression I have left on my mind on reviewing the wounded as a whole, is that, dividing the body into an upper part (embracing the head and neck, upper extremities, and all the thorax above the level of the nipples), and a lower part (including all the chest below the line of the nipples, the abdomen, and the lower extremities), wounds of the upper part were quite as numerous as those of the lower part. But here again comes in the modifying fact, that, in a great deal of the fighting, the Turks fought from cover of one kind or another, not from any fear of meeting the enemy in the open field, but simply because, when it could be done, it was most advantageous for the Turks, who were often in inferior force, and the attacked and not the attacking party.

Again, the 52 cases which I have slumped together as wounds of the upper extremities, I find may be divided into:—

27 wounds of the arms,
19 of the fingers,
6 of the hands,

showing that half of the entire number of wounds of the upper extremities are embraced under wounds of the hands and fingers

—this representing one-fourth of the whole number of wounded. This is a very large proportion, and from the very partial statistics on which it is founded, I would certainly not think of building upon it in any way. At the same time, the large number of wounds of hands and fingers has been noticed and remarked upon in many previous wars. In the Italian war of 1859, more than one-seventh of the whole wounds received during the war were returned as wounds of the hands and fingers. This frequency of wounds of the hands and fingers has been rightly attributed, I think, to the nature of the fighting. Wherever the hands have to be much used and exposed, as in climbing slopes, or in firing from cover of any sort, as houses, walls, earthworks, or rifle pits, there you must have a large proportion of wounds of the hands and fingers. This certainly was the nature of a great deal of the fighting in Bulgaria, and the large number of wounds of hands and fingers was a constant subject of remark among the surgeons.

One day, three wounded soldiers were brought into the camp at Orkhanie. They said they had been wounded three or four days before in a skirmish with the Russians, but as there were a number of suspicious elements in their story, they were sent along to the hospital to be examined as to whether their wounds were possibly self-inflicted. On examination, I found one suffering from a very severe wound of the right elbow—the bones composing the joint being completely shattered, and the soft parts immediately round it carried away or destroyed. Another had a severe wound of the right hand—the bullet having passed through the hand, entering on the palmar surface and fracturing the 3rd and 4th metacarpal bones about half an inch from their carpal extremities. The third had the index finger of his right hand nearly blown off—the finger remaining attached to the hand by a few shreds of skin and muscle only. From a surgical point of view, the most suspicious circumstance, in all of them, was that the firearms, which produced the wounds, must have been discharged close to the body, so close, indeed, as to scorch the surrounding parts; and on careful examination grains of gunpowder could be detected embedded in the skin and surrounding tissues. Of course, I had to return an answer that any of the wounds might have been self-inflicted. The two men, with wounds of elbow joint and hand, were in a remarkably depressed state, their wounds being exceedingly unhealthy and dangerous looking. They had evidently been much reduced by over fatigue and exposure, so I was allowed to take them into the hospital under a guard, where, fortunately for the poor wretches, they both succumbed

to pyæmia. The third man was marched off to execution. These were the only cases I saw of self-inflicted wounds.

There are many curious wounds seen in military practice. In the Shipka wounded I was often struck by the fact, that bullets entered the neck and lodged three or four inches from their point of entrance, the wound produced being very small. I looked upon such as wounds produced by bullets striking with very much diminished velocity. It was certainly wonderful how often you would get bullets lodged in that dangerous region known as the anterior triangle of the neck, which had produced no serious mischief, and often caused little inconvenience. The most curious case I had of this sort was one where I removed a bullet which was actually jammed in the fork formed by the bifurcation of the common carotid artery. It was so tightly fixed between the two carotids that I hesitated, at first, to remove it for fear of bleeding. The man recovered without a bad symptom.

I had a strong muscular young fellow under my care for a short time, who had eight wounds caused by one bullet. The bullet struck him on the outside of the middle of the right arm, and passed through the arm, causing a simple flesh wound; then it passed through the fleshy part of the right breast, below the nipple; then through a corresponding part of the left breast; and last of all passed through the left arm, fracturing the humerus about its middle. The man informed me he received the wound as he was leaning forward, and just about to bring his rifle to the shoulder to fire, which position explains perfectly the course of the bullet.

Another man had a bullet lodged in the left orbital fossa, from which it was extracted. It entered through the left temporal fossa, and caused protrusion of the eyeball, which had to be extirpated. This man was under my care for several days, during which time he was progressing favourably, but I had to leave and so lost sight of him.

Another man had the entire body of the lower jaw, together with the soft parts around and forming the floor of the mouth, carried away by a fragment of shell. Although a hideous looking object, he recovered so rapidly that he was able to be utilized as an hospital attendant in a few weeks. Generally speaking, however, wounds of the face, no matter how dangerous looking, healed up wonderfully quickly, and well.

I saw very few wounds of the head, but those I did see, impressed me with the importance of non-interference on the surgeon's part, unless for the relief of urgent symptoms. Even in cases of depressed fracture with external wound, if there

are no urgent symptoms, the less the surgeon interferes the better. I had one case under my care illustrating this. This man was wounded, in an attack on the Russian positions at Shipka, by a bullet over the vertex. The bullet had passed across the head, at a right angle to the direction of the sagittal suture, causing a wound in the scalp of about two inches long, leading down to a depressed fracture fully a quarter of an inch in depth. The patient, at the moment he received the wound, was running forward firing his rifle, and he fell over the trunk of a tree, and lay stunned for a short time. When I saw him he was quite sensible, and complained of nothing but the blow he had received on his chest in falling. He did not think the wound of his head had caused him to fall; in fact, he would not admit that at all, but believed he had accidentally tripped over the fallen tree. There were absolutely no symptoms demanding interference, so cold water dressing was applied to the wound, he was kept quiet in bed, and special care taken of his stomach and bowels. He recovered perfectly.

I have several times had men brought from the field in a comatose state, with a bullet deeply lodged in the brain, or having had one driven right through the brain. I have seen men in that state live for several hours, but I mention them, merely to remark, that they are cases which, however harsh it may seem to say so, had better never be removed from the field at all. Hopeless cases like that, which must die, and that generally within a few hours, should only be attended to after you are certain there are no more poor fellows to whom your services and attention may be of some avail. It is here our new Army Hospital Corps of trained bearers, for gathering up the wounded during a battle, and removing them to the dressing stations, will most conspicuously show the advantage of organized method in such work. Instead of spending their time (as has to so great an extent been the case in similar circumstances hitherto) in removing the wounded promiscuously, often taking up a man who dies before they reach the surgeon, they will be taught to distinguish between the wounded, and to carry off only those to whom the surgeon's skill can be of some use. Without this picking out process, in a big battle, a large part of the time and strength of the bearers will be spent in carrying off hopelessly wounded men, to the lasting detriment of many others whom they leave behind, and to whom their early assistance would have meant life and home again.

The best way in which to administer chloroform to patients, about to undergo operation, I have found a subject of great

dispute, and one associated with wide differences of opinion. Generally speaking, I found that our Scotch style of giving it on a folded towel was looked upon with great distrust and aversion. I found however, that, for military practice at any rate, in dispensing with a special apparatus, and in the saving of time, the Scotch style had important advantages over the cone of lint or linen, or one of the German apparatus, such as Esmarch's (formed by stretching a bit of flannel on a wire frame), which were the methods commonly made use of. Wherever you have a towel, or handkerchief, or bit of cloth, there you may give chloroform according to the Scotch style; it is, therefore, always ready to hand. Then given, as I shall detail below, the patient falls into the condition of complete anæsthesia in very much less time, remains in such a state more readily, and comes out of the influence of the drug more rapidly than in any other mode of administration.

The conclusion to which I have come in regard to the administration of chloroform is, that the giving of it should be entirely in the hands of one individual, with, at most, a single assistant, chiefly to take charge of the chloroform bottle, and to hold the forceps when applied to the tongue. The person, intrusted with the giving of chloroform, should see that the patient is lying comfortably on the operating table, taking care that his head is low, having it raised but slightly above the general level of the body. He should see that all constriction, caused by tightness of clothing, is relieved by loosening the dress, which should also be thrown open so as to expose, fully and freely, the front of the chest, as far as the pit of the stomach. He then takes his stand at the head of the patient, with a pair of ordinary bull-dog artery forceps hanging from the front of his coat, and, having folded an ordinary towel once or twice, till it forms a square of about a foot, he should pour about a couple of drachms of chloroform in the centre of the towel, and, telling the patient to shut his eyes and breathe quietly, should with one hand hold it down, in a somewhat arched form, over his mouth and nose. He notes the pulse by keeping his other hand over the temporal artery, and the respiration, both by attentively listening to it, and by keeping his eye on the movements of the diaphragm at the pit of the stomach. He should take an occasional look at the eyes, and here, Bryant's rule for complete anæsthesia is a good and safe one to follow—viz., "when the upper eyelid can be raised without muscular resistance, and no muscular contraction is caused by touching the cornea, the patient is, as a rule, sufficiently under the influence of the anæsthetic for

surgical purposes." Until this condition is reached, the chloroform should continue to be given freely. And it is of the very highest importance, when this state is reached, not to allow the patient to come out of it for a moment, but, by careful regulation of the chloroform, to maintain him in it until the operation is so far completed, that by then stopping the administration, he should be restored to complete consciousness about the same time that he is ready to be removed from the operating table. If, during the administration, the patient's breathing shows signs of becoming arrested, assuming a convulsive character, while the abdomen and chest retract and become hard like a board, the chloroform cloth should be removed for an instant, at the same time giving a smart slap or two with the open hand over the chest, and it will usually go on all right. Whenever the breathing becomes snoring, as it generally does in the state of most profound tolerance, the bull-dog forceps should be introduced into the mouth, and, getting a good hold of the tongue, it should be pulled well out of the mouth and held there.

Patients treated in this way, getting chloroform in large quantity from the first, so as to be brought quickly and thoroughly under its influence, stood the administration of chloroform better, came out of it sooner, and suffered less from shock than did those who had it given to them in the usual slow and gradual fashion. The giving it in this way saved both time and assistants, and the quantity of chloroform used was often actually less than in the gradual system. The patient also passed through no stage of excitement hurtful to himself, and requiring the attendance often of several men to control his struggles. Out of the number of cases in which I have given chloroform in this way, I have not seen one exhibit really dangerous symptoms. I have come to regard the first five minutes as the dangerous period in administration in this way, and if you get safely over that interval, the patient is likely to behave well all through any ordinary operation. At the same time, I never give chloroform but I feel impressed with the seriousness of the situation, and that the patient's life or death may depend on the vigilance and care of the administrator. This sense of grave responsibility, which will deter any one, occupying the position of administering chloroform, from removing his attention for a single instant from his patient, even to look at an interesting point in an operation is, I think, a safeguard not unfrequently overlooked. For familiarity is apt to breed contempt, and we are often tempted, after seeing numbers of successful cases of the administration of

chloroform, to fall into the mistake of imagining that because the danger attending its use may have been exaggerated, the great vigilance and care taught to be observed in its administration are also exaggerated and unnecessary.

Generally speaking, skin flaps with a circular cut through the muscles will be found the most useful method of operating in cases of gunshot injury. For this reason chiefly, that you will often get good skin flaps much lower than you can get muscular flaps, bullets injuring the deeper tissues for considerable distances around their track. But here, as in civil practice, he is the best surgeon who is least trammelled by either special methods or special instruments, and who, working on some sound general principles, can improvise both methods and instruments if required, and treats each case on its individual merits.

The general result of surgical work in this war was unfavourable, owing principally to the bad hygienic surroundings of the wounded, especially in the matter of overcrowding. The wounded were in great part transported from the field in native arabas or bullock carts, vehicles quite devoid of springs, the jolting of which over the rough roads made conveyance in them be looked upon, even by a strong healthy individual, as a kind of horrid torture which was simply intolerable for any length of time, so you can fancy what it must have been in the case of helpless wounded. And, as they do not travel above two miles an hour, you can imagine the length of time the wounded must have been subjected to this torture before getting sufficiently to the rear of the fighting, much less to hospitals 30 and 40 miles off.

The consequence was that the condition of the wounded, received at a place like Philippopolis, little more than 30 miles from Shipka, was really dreadful. With their wounds in a state of the most profuse and unhealthy suppuration, and often alive with maggots—with nothing but some hard biscuit or black bread for their nourishment by the way, there is little wonder that the fatigue and torment of this awful journey, made as it was too at a time of the year when the heat was perfectly tropical, landed them at Philippopolis far more dead than alive. And yet such splendid and unbroken constitutions had these men that, after a few days' rest at Philippopolis, they were incessant in their desire to be taken on to Stamboul, which they regarded as their haven of rest.

And here it is I should like to say something in regard to the antiseptic treatment of wounds. If antiseptic surgery had done nothing more for us than introduced to our notice carbolic

acid, I should say that for that alone, it deserves our very best thanks, at least of those of us who have been in similar positions to those referred to here. With a 1 to 20 watery solution of the acid we attacked those foul suppurating wounds, and after a thorough syringing out with it, we washed them out once a day, oftener if possible, with a 1 to 40 solution, and in a few days the wounds were comparatively fresh and clean, and the patients were neither a source of danger and discomfort to themselves nor others—the sickening smell of the putrid wounds having given place to what, by way of contrast, might well be termed the fragrant odour of carbolic acid.

It is, I think, absolutely impossible in military practice to expect ever to be able to carry out the antiseptic treatment of wounds with all the regard to detail required by Mr. Lister. Even Mr. Lister, in some directions he published for use during the late Franco-German war, entitled *A Method of Antiseptic Treatment Applicable to Wounded Soldiers*, although he is evidently striving to reduce to a minimum the necessary details of such a treatment, yet most signally fails to solve the military surgeon's difficulty in this matter, and show a possible way of getting some, at least, of the benefits of the antiseptic treatment in active military practice. The method he proposes is cumbersome to a degree, both in regard to the material and the time necessary. And I agree most fully with Mr. Longmore in his adverse criticism of it, especially when he concludes—"from the nature of gunshot wounds, and from the circumstances under which they are inflicted in warfare, it is scarcely credible that any plan of treatment, the success of which must depend on the rigid exclusion of such germs, can ever possibly be carried into practice in the field." At the same time, I do not see why this system, the foundation principles of which are now so generally admitted to be true, should not be carried out in military practice so far as possible. It is a mistake, often made, to suppose that you must throw the whole thing overboard because you cannot carry it out in its entirety. I think in military practice a great step will have been made in this direction, from which we may expect no small amount of benefit to follow, if the Listerian ideas were only carried out so far as to make it possible to dress each wound with carbolic acid dressings, and wash it out thoroughly and regularly with a carbolic solution of definite strength. This is the length to which we may reasonably expect to be able to carry out the antiseptic treatment in military practice—the only requisites being a good supply of the acid, with means of making up the solution, as near as possible, at least, to a standard strength,

and above all, an ample supply of suitable syringes. If this were carried out fairly well, we might reasonably expect a large diminution of unhealthy stinking suppuration among the wounded, which, besides the general comfort resulting therefrom to the patients themselves, and to those about them and working with them, would mean vastly lessened chances of pyæmia and septicæmia, and therefore a proportionately larger roll of saved lives among the wounded.

My first operation in Turkey so far illustrates this point. At Philippopolis I performed excision of the shoulder joint on a young Turkish soldier about 25 years of age. He had been wounded some days before at Shipka, the bullet—having entered the joint at its outer and posterior aspect just below the acromion, and fracturing the humerus, both head and shaft—passed out about two inches below the joint on its inner aspect. The soft parts were lacerated and contused, but not more than was usual in such wounds, and pretty free suppuration had commenced. The young fellow was much delighted when told that his arm would be saved—that we only intended removing a bit of the bone, so he readily consented to the operation. In this case, as in all others, I used one of Dr. Foulis' bands for controlling hæmorrhage, having taken several out with me,—and I would like to mention here, that I found them exceedingly useful in the exigences of military practice, being preferable in my opinion to either Esmarch's india-rubber tube apparatus or Nicaise's compression belt. They were easily applied, and just as easily taken off, and often enabled you to dispense with an assistant.

Knowing the great shattering power of the modern conical bullet, I determined to make my incision large, and also, for another reason, I decided to have it quite apart and distinct from the bullet wounds. Entering the knife a little to the outside of the coracoid process, I carried it downwards and outwards for about six inches, making one clean cut right down to the bone. The joint was easily entered, and the muscles attached to the humerus cleared away—the long head of the biceps, being fortunately uninjured, was carefully preserved. I did not require to remove more than about two inches of the shaft of the bone besides the head. Washing the wound thoroughly with a 1 to 20 watery solution of carbolic acid and inserting a drainage tube, I stitched it up with silver wire, putting in a large number of stitches, and putting them unusually close together. With a simple pad in the axilla, and his arm in a broad sling, the man was put to bed, where he got a hypodermic injection of morphia. Next morning I found

the patient had slept well—he felt very well, and had taken his breakfast with an appetite. I carefully syringed the wound with a carbolic solution (strength 1 to 40) through the drainage tube and applied fresh dressings, which consisted simply of a couple of thicknesses of lint, saturated with the carbolic solution, sufficiently large to envelop the whole aspect of the joint embraced by the wounds both of knife and bullet, which in turn was covered in by a piece of gutta percha tissue, and the whole bound loosely by a few turns of roller bandage. The wound was only dressed once a day from the first. On the third day the wound looked so well that I removed every second suture, and on the fourth day the drainage tube was removed. By the ninth day the wound was completely healed, all the sutures removed, and the bullet wounds were granulating up from the bottom. I had to leave Philippopolis that day, but instructed the man before leaving how to carry out passive movements in his arm himself. I never saw him again, but believe, after serving as an hospital attendant for some time, he left for his home in a distant part of Asia perfectly well, and with a remarkably useful arm.

I suppose it will be freely admitted that those wounds heal most readily which are the result of a single clean cut, and that being so, it is a matter of much surprise that the sound practical principle embodied in such an admission is so seldom kept prominently in view in actual practice. In the case just quoted (excision of the shoulder joint), it was a very simple matter to cut right down to the bone in a single clean cut, and yet I have noticed not unfrequently in similar cases—for what reason did not appear—a decided failure to do so, and rather a tendency to make several cuts in places where one would have sufficed. I merely refer to this point, but,—as I believe one of the most important lessons to be learnt in practical surgery is, that, having made up your mind to operate, and knowing exactly what you have got to do, you should accomplish it in the fewest number of cuts of the knife possible,—I trust the reference may not be considered out of place.

Then, again, I have observed that one of the best means possible of getting a fistulous opening, of moderately recent standing, to close up, is by making a counter opening, and on this principle I made my incision for the excision (contrary to the usual directions), quite apart from the bullet wounds. The result, I think, justified the method, both wounds beginning to heal up together and doing so quickly.

Again, I employed a large number of sutures, for the purpose of keeping the tension as equal as possible along the

whole length of the wound. My attention was first directed to this point by my friend Dr. Macewen, and my experience with him as house surgeon, and since then, has confirmed me in looking upon this as a very necessary precaution to take, when you wish to secure healing by first intention.

Then the washing out the wound thoroughly and carefully with a 1 to 20 carbolic acid solution, the dressing with a simple carbolic acid water dressing, and the careful syringing with a carbolic solution so long as there seemed to be the slightest fear of discharge lodging in the interior, were all the antiseptic precautions adopted. And I leave it to you, gentlemen, to say whether, with the above mentioned simple precautions, which are capable of being adopted by any one, and which, so far as I am aware, formed the only difference between my case and other similar cases, in the same hospital, which died, you do not think that some part, at least, of the success in this case is to be attributed to the antiseptic part of the treatment, even partial and imperfect as it may appear.

The only other operation to which I shall specially refer is that known as Teale's amputation. Teale amputated by a long and a short rectangular flap, the long flap being cut from that side of the limb where the parts are generally devoid of large blood-vessels and nerves, these structures being included in the short flap. The advantages claimed by Teale, for this method, are a good covering, a dependent opening for discharges, and a cicatrix free from pressure from the end of the bone—and all this may readily be granted, and against it put the disadvantage of having to saw the bone at a higher point than when you use two short flaps. I have already referred to the wedge-like power of the conical bullet, used in modern warfare, by which it splits and destroys a bone far beyond the point where it actually strikes. In this very fact I thought I saw a reason why Teale's operation should be a good one in military practice. The bone is often injured badly a good way above the point of injury to the soft structures, so, by adopting Teale, I thought I would get all his advantages without any drawback at all. I soon came across a first rate case for the purpose. At Orkhanie I performed this operation on a soldier under 30 years of age, who had received a bullet through the left tibia. The bullet had entered the leg on its outer and anterior aspect, just above the ankle joint, and, missing the fibula, smashed through the tibia, emerging behind about an inch above the inner malleolus. It had evidently passed through at a high velocity, judging by the large and irregularly torn appearance of the wound of exit, and from the great shattering of the

bone, which could be made out by inserting a finger into the wound. The man was in remarkably good condition, not much pulled down by his sufferings, and seemed a strong healthy fellow. No case certainly could have appeared more favourable for a Teale. The limb was amputated between the middle and the lower thirds of the leg, the situation considered most suitable for a Teale. The force of the bullet having fallen in great measure upon the bone, left the soft structures comparatively uninjured. The nature and extent of the injury to the bone necessitated its division high up, operate by whatever method we chose, and yet it was possible to get good flaps a considerable way below the point, where the bone required to be sawn, especially on the anterior aspect just where Teale's long flap comes from. I measured and marked out the flaps, with ink, most accurately, according to the rule laid down by Teale himself. The man stood the operation well. Unfortunately I had to leave next morning for duty further along the Plevna road, and when I returned, some days after, I found the flaps had sloughed, and the leg had been re-amputated higher up. This sloughing of the flaps, especially the long one, is the constant experience of all military surgeons who have tried Teale's operation, so that I am afraid we must look upon it as a most unsuitable method. I certainly would never think of trying it again, not because one unsuccessful case is sufficient of itself to condemn a surgical method, but because there was everything possible associated with this particular case to make me distrust this style of operation. Mr. MacCormac, of St. Thomas' Hospital, in his *Notes of an Ambulance Surgeon during the Campaign of 1870*, states that the only fatal case of amputation in the middle third of the leg was one where Teale's operation had been performed. He significantly adds, "it was the only instance in which recourse was had to this form of operation."

Although not a military case, the following, as a rare and what some may even consider an obsolete surgical operation, may be interesting:—While I was acting at Philippopolis as chief medical officer for the Stafford House Hospitals there, I came a good deal in contact with Dr. Vlathos, the chief civil practitioner of the town and district, and who was, besides, one of the surgeons in connection with the Government hospitals. Dr. Vlathos was of Greek nationality, about 52 years of age, and had studied and taken his diploma from the Vienna School of Medicine. He was a most intelligent and agreeable gentleman, and a very good surgeon, and took no little trouble in showing me any cases in his private practice which he thought

would be interesting to me. One day he asked me if I would assist him at a private operation for stone, to which I most readily assented, never thinking of anything but lateral lithotomy. Accordingly, late in the afternoon, we proceeded to the house of a Greek merchant, where Dr. Vlathos operated on his little boy, nine years of age, by the suprapubic method, and succeeded in extracting an encysted mulberry calculus, about the size and shape of a pigeon's egg, and weighing nine grammes. The wound healed by first intention, and five days after the operation the boy was running about quite well. The operation was performed as follows:—After preliminary sounding, in which there was considerable difficulty in detecting the stone, the sound was withdrawn, and the point of the penis compressed by an assistant to prevent the escape of urine. An incision was then made about two inches long, carried from the pubis directly upwards in the mesial line, and the tissues carefully dissected downwards, till the external coat of the bladder was fairly exposed. During this dissection, the peritoneum was wounded, and the bowels had to be prevented from protruding through the wound. Dr. Vlathos remarked on this incident that, in his experience, he had never seen any great harm come from simple wounds of the peritoneum, if properly attended to. He thought surgeons were too much afraid of wounding the peritoneum. He then thrust the knife right through the coats of the bladder, at the same time causing the point of the penis to be let go, when at once the urine passed out freely by the urethra. He then enlarged the opening into the bladder by cutting downwards towards the neck, and, introducing his finger, found that the stone was entirely enclosed in a long deep cyst, somewhat like the finger of a glove, the top of which was covered in by a thin membranous substance. To get at the stone he had to introduce the knife, and cut through this top covering, after which, by means of his finger and a scoop, he extracted the stone. After the extraction of the stone, I introduced my index finger, which I could easily insert into the cyst, right up to the webbing at the top of the finger. The cyst felt thick and fleshy, and stood out into the cavity of the bladder. A single stitch of silver wire sufficed to bring the edges of the wound closely together, and after a simple water-dressing a sponge was put over all, and firmly bound down. The little fellow was put to bed, and strict injunctions given to keep him on his back. The urine came away readily by the urethra, without the use of a catheter, and there was never the slightest suspicion of urinary infiltration, the wound having

healed by first intention. The experience of Dr. Vlachos, of Philippopolis, was entirely in favour of the high operation for stone, especially in the case of children. The case I mention here was the ninth of a series of successful cases. In nearly all these cases, the wound healed by first intention, and the urine came away by the urethra from the first, without requiring to use a catheter, and in all of them the patient was going about very much sooner than he could otherwise have done had he been treated by the lateral method. Again, in the case which I have described, the extraction of the stone, though completely enclosed in a deep and fleshy cyst, was easily accomplished, which, I am sure, by the lateral or any other method would have been not only difficult but impossible. I was much impressed by this operation, and the more I have studied the subject and its literature, the less am I able to understand why an operation, with a history so successful and encouraging as that of the suprapubic operation for stone—one so easy to perform, with so little risk attending it, either of danger to the patient or of failure on the surgeon's part, an operation, moreover, from which the recovery is generally so rapid and complete—should be so entirely ignored by modern surgeons.

I have already incidentally referred to the loathsome presence of maggots in the wounds of soldiers during the hot weather. Fortunately we found the ordinary strength (1 to 40) of carbolic acid solution, which we used for dressing the wounds, a perfect protection from this plague. When we got a case of a deep wound filled with maggots, and where they had likely burrowed, our usual plan was to inject a 1 to 20 solution of carbolic acid, which effectually killed them, and allowed of our picking them out of the wound. After cleansing out the wound thoroughly, we dressed it with lint or charpie soaked in the weaker (1 to 40) solution, which we found proved a complete safeguard from the attacks of the flies. Mr. Longmore, in speaking on this point, says "that the weak solutions of 1 part in 100, such as are usually employed in direct dressings, are of no avail in warding off flies." This I can easily believe, but I certainly never saw such weak solutions employed in direct dressings, having always used myself one of, at least, the strength of 1 part in 40.

I have already mentioned as a most useful instrument Dr. Foulis' improved elastic tourniquet. But when I speak of it in this way, I do so simply in connection with its employment by a surgeon at an operation, where it is used under professional direction, and where the time it is allowed to constrict

the limb is limited. For I consider it, as well as all other forms of tourniquet which act by firmly constricting a limb in its entire circumference at the point to which they are applied and completely arresting its circulation, as most dangerous, and unless, in exceptional circumstances, most unwarrantable contrivances for the arrest of hæmorrhage on the field. On the battlefield a surgeon never knows how long a tourniquet, once applied to a wounded limb, may be allowed to remain without the patient receiving the necessary aid and attention. In a wounded limb left for any length of time thus tightly compressed and strangulated, you cannot expect to find anything else than a gangrenous state of the parts thus unnaturally dealt with—and the more complete this constriction, and the longer it is continued, the greater will be the extent of the parts involved, and the more thorough will be the action of the gangrene. To avoid the great risk run by complete constriction of the limb, tourniquets have been devised with projecting wings for the purpose of relieving the limb from compression, unless just over the main artery, and on the opposite part of the limb where counter-pressure is exerted. This is certainly a step in the right direction, and provided the idea can be efficiently carried out in a practical instrument for field use (as it appears to be in Moffitt's winged screw tourniquet), it is certainly the only form which should be allowed for use on the field. Tourniquets are comparatively seldom required on the field, primary hæmorrhage being an infrequent cause of death on the field. When we consider this, therefore, and look at the risk run by unlimited application of tourniquets, the conclusion, come to by so many army surgeons of experience, and which is said to have been resorted to with much success in the Russian army in the Crimea, that tourniquets should be dispensed with, and the practice taught of stopping hæmorrhage by inserting a finger into the wound, seems a most practical one, and one thoroughly deserving a fair trial.

Splints were a source of much trouble to us in Turkey. We had a large supply of ordinary wooden splints, but the difficulty of finding one to fit each particular case, and the trouble entailed in making them fit was a constant source of annoyance. How I have wished for a good supply of Gooch splint, to which I had been accustomed in the Glasgow Royal Infirmary! I am quite convinced there could not be a more suitable splint for military practice than this flexible splint of Gooch's. It is firm and light, and easily cut to any shape or size you require, and from its perfect flexibility cross-ways admits of considerable moulding to the limb. There are two other varieties of splint formed on this model—viz., Schnyder's cloth

splint and Esmarch's splint material, and although I have never used either, I am satisfied, from my experience with Gooch's splint, that this is the proper idea for splints for use in military practice, where lightness, combined with firmness, and the rapidity with which a splint can be fitted to any particular case, are of the utmost importance. Prepared splints, whether of wood, or pasteboard, or wire, or tin, are of comparatively little use, as you seldom get among a stock of prepared splints one which will exactly fit the particular case; and the trouble of moulding and fitting a prepared splint to a particular case is greater and more annoying than any one would believe who has not tried it. With splint material, like Gooch, on the other hand, you cut out in a few minutes with a pocket knife the sort of splint most suited to each case, and splints moreover exactly to your own mind.

In speaking of excision of the shoulder, I mentioned that after the operation the arm was put up with a pad in the axilla, and supported by a broad sling. Now this pad was roughly and quickly fashioned after the manner of Stromeyer's triangular cushion, the idea and purposes of which I have always, since it first came under my notice, accepted as correct, and endeavoured to carry out in the treatment of injuries of the upper arm and shoulder joint. And after considerable experience of the sort of cases to which it is applicable, I can well understand the high value Stromeyer places on this invention of his, than which nothing could be more naturally fitted for treatment of compound fractures of the upper arm and cases of injury to the shoulder joint. It gives a position of most perfect support, stability, and comfort to the wounded limb, while at the same time it entirely removes any risk of the occurrence of gangrene, which is so much to be dreaded in such a part when anything is applied likely to constrict the limb and interfere with its circulation, such as splints and bandages. I think it would form a most valuable addition to army surgical stores a supply of such cushions made of india-rubber, and arranged so as to be fitted for use by being filled with air, or they could be stuffed with any soft material, such as wool or charpie, if their air-holding capabilities were in any way interfered with or destroyed. In such a skeleton form, made of either india-rubber or light canvas, of various sizes (from 12 to 15 inches a side), a large supply of Stromeyer's invaluable cushion could be carried with little addition to either bulk or weight of stores.

Plaster of Paris was used a good deal for splints, but my experience of it is not very favourable. I chiefly object to it on account of its weight and liability to crack, and especially

in the case of men who had to be conveyed for long distances over rough roads in springless machines, did these objections show themselves and prove most troublesome. I think paraffin, as suggested by Dr. Macewen in a paper published in *Lancet*, 31st August, 1878, would form a much more desirable and useful material for splints. It has the very great advantages, from an army surgeon's point of view, of being light to carry, not being easily injured—water especially being quite harmless to it—and it may be used many times, old splints being melted down to make new ones. Any one who has had the opportunity of seeing, side by side, two cases of fractured leg, one done up in plaster of Paris and the other in paraffin, will never forget the incomparable look of comfort produced by the lightness of the paraffin splint; and when you come to speak of transporting the two, the enormous advantages of the light paraffin splint will become more and more apparent. The only seeming disadvantage attached to paraffin, as compared with plaster of Paris, is that of its requiring heat for its application, but that is a small matter to put against its very great advantages; besides, fire could readily be got at the first line of hospitals, where the application of such splints is most likely to take place.

The Turks are notoriously a tobacco smoking people, using however, as a rule, the mildest varieties of the fragrant weed, and chiefly in the form of cigarettes. Nothing, therefore, was more acceptable to us in our work among the wounded than the large supplies we received of tobacco. I really do not know what we would have done without it. As Mr. Longmore most truly and appreciatively says, "no one can doubt its soothing effect on men suffering from the pain of wounds, or that it allays nervous excitement, and produces a state of calm which helps to secure the rest which is so beneficial to them in every way. The contentment it affords to the patient helps the surgeon in his work, and enables a man to submit cheerfully to many deprivations unavoidable from the circumstances of his position, the absence of which, without it, would fret and worry him." I have seen the aspect of a whole ward of wounded men changed, as by a miracle, from a silent, sombre wretchedness to one of light and glad contentment by the opportune distribution of a few packets of tobacco and cigarette papers. To have seen such a sight was, in itself, enough to make one for ever thankful that there is such a plant as tobacco, the use of which is capable of affording so much comfort in distress, alike mitigating the tortures of a pain racked body, and soothing the misery of a troubled mind. There does not appear to be any good reason why such a

powerful aid to the doctor should be so thoroughly excluded from our civil hospitals. Its allowance, under definite regulations as to time and place, there is little doubt would benefit many, and that, too, without interfering in any way with the comfort of non-smokers; while the fact of its being allowed would prevent its use in a surreptitious manner, with its attendant risk of fire. However this may be, there are no two opinions regarding its usefulness and almost necessity as part of army hospital stores.

There are still many interesting points which I should like to have touched upon, but I feel I have already trespassed sufficiently upon your patience, so will conclude by referring briefly to the noble work of aid to the wounded, conducted by Lady Strangford during this war. One of the greatest difficulties we had to contend with, in our treatment of the wounded, was the almost entire absence of nursing. There were soldiers, no doubt, to attend and watch the wounded, but you could not call their care of the wounded, well intentioned and kindly though it always was, nursing, unless by a most vague and general use of that term. Lady Strangford set herself the task of showing the vital importance of good trained nursing, which could intelligently carry out the surgeon's directions, and thus aid most efficiently the patient's recovery. How Lady Strangford, in her private hospitals, assisted by her staff of female nurses, succeeded in showing a result, in the comfort of her patients and their chances of recovery, that was utterly unapproachable in the best and most carefully conducted hospitals, where there was only the usual male nursing, any one of the many who have had the pleasure of visiting her hospitals can abundantly testify. Women are incomparably better adapted, both physically and morally, for the duties of nursing the sick than men, and trained female nurses are simply invaluable to the surgeon. Their aid cannot well be rendered available on the battle field, but there is no reason why it should not be ready to hand immediately to the rear of the fighting, and after the battle. We naturally feel proud of the fact that it is our own countrywomen who have been first in this blessed and heroic work, and while they may fairly claim the honour of leading the van of the fair and noble army of aid to the wounded in war, it must be no little satisfaction to them that the heart of women in all other countries quickly responded in sympathetic action, and that all have combined with one accord to lay the gratitude and admiration of the civilized world at the feet of that illustrious veteran in this grand work, FLORENCE NIGHTINGALE.